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09/702,379	10/31/2000	Ronald A. Askeland	10002282-1	5283

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EXAMINER	
JONES, DAVID	

ART UNIT	PAPER NUMBER
2622	

DATE MAILED: 07/29/2004

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/702,379	ASKELAND ET AL.	
	Examiner	Art Unit	
	David L Jones	2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 July 0703*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *31 October 2000* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *4*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement (IDS) submitted on 7/7/03 was filed before the mailing date of the first action on the merits. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Drawings

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference character(s) mentioned in the description: Page 10, line 15, lists a #408 for figure 4. Corrected drawing sheets are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: Fig. 7, #726. Corrected drawing sheets, or amendment to the specification to add the reference character(s) in

the description, are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

4. The disclosure is objected to because of the following informalities: Page 5, line 5, lists a Fig. 1A, there is no figure 1A.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1-6, 8-11, and 18-20 are rejected under 35 U.S.C. 102(e) as being anticipated by Imanaka et al. (US 6,116,714).

Regarding claim 1, Imanaka et al. (Imanaka) discloses a printhead (fig.1, #12) comprising a processing head having a distributive processor 1 integrated with an ink ejection driver head 12, the distributive processor being preprogrammed with a correction scheme that selectively prints ink drops for correcting artifacts (column 6, lines 26-58).

Regarding claim 2, Imanaka discloses a printhead wherein the correction scheme corrects systematic ink drop placement errors of the printhead. As disclosed in column 3, lines 51-67 and column 4, lines 1-6, Imanaka teaches that problems of the prior art are there is a variance in the amount of ink discharge produced by each nozzle. Which leads to irregular density and streaks at the time of printing, and makes it necessary to control the amount of ink discharge on a per-nozzle basis or in units of several nozzles. Of which Imanaka discloses (column 7, lines 4-12) that each nozzle or units of nozzles are controlled by monitoring a change in temperature in each heater board, the head data detector monitors these elements and sends the data back to the CPU, which generates correction data.

Regarding claim 3, , Imanaka discloses a printhead that further comprising a general correction scheme generated during manufacturing of a class of inkjet printheads.

Regarding claim 4, Imanaka discloses (column 7, lines 23-57) a printhead wherein the general scheme includes corrections that cover additional errors that exist.

Regarding claim 5, Imanaka discloses (column 11, lines 1-9) the ability to further allow for individual correction schemes generated during manufacturing of individual inkjet printheads.

Regarding claim 6, Imanaka discloses (column 7, lines 23-57) a printhead wherein the general scheme includes corrections that cover additional errors that exist.

Regarding claim 8, Imanaka discloses (column 13, lines 50-60, fig. 16) wherein the correction scheme is programmed by a control program ROM 1702 for storing a control program executed by the MPU 1701.

Regarding claim 9, Imanaka discloses (column 13, lines 62-67 and column 14, lines 1-3, fig. 16) wherein the correction scheme is encoded on a memory device 13 incorporated into the printhead.

Regarding claim 10, Imanaka discloses wherein the correction scheme is generated at the time of both manufacturing (column 7, lines 23-57) and upon printhead operation (column 11, lines 1-9).

Regarding claim 11, Imanaka et al. (Imanaka) discloses a method for correcting systematic printing errors of an inkjet printhead comprising:

determining (column 6, lines 26-58) systematic errors that are associated with the printhead;

recording and storing systematic errors (column 6, lines 36-43), as taught by Imanaka that the data is stored in the latch circuit (memory, fig. 1, 12);

generating (column 6, lines 44-49) a correction scheme to correct the systematic errors; and

applying the correction scheme (column 7, lines 13-22) to the printhead during printing operations to selectively print ink drops for correcting printed artifacts produced by the systematic errors.

Regarding claim 18, Imanaka et al. discloses an inkjet printing system comprising:

a controller (CPU, fig. 1, #1);

a printhead assembly (fig. 1, #6-12, column , lines) in bi-directional communication with the controller and having a distributive processor integrated with an ink ejection driver head; and

wherein the (column 11, lines 21-42) distributive processor is preprogrammed with a correction scheme. that selectively prints ink drops as instructed by the controller for correcting printed artifacts.

Regarding claim 19, Imanaka et al. discloses (fig. 9, 2040, column 10, lines 20-31) an ink supply for providing ink to the printhead assembly. Further, in figure 15, Imanaka discloses the entire ink cartridge IJC mounted on the HC unit (column 13, lines 14-42).

Regarding claim 20, Imanaka et al. discloses (column 13, lines 14-67 and column , lines 14, 1-16) a media moving mechanism (fig. 16, 1709); a printhead support mechanism that supports the printhead assembly in relation to the media moving mechanism (fig. 15, HC); and a removable ink supply container (fig. 15, IJC) fluidically coupled to the printhead assembly for providing ink to the ink ejection driver head.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 7, and 12-15, are rejected under 35 U.S.C. 103(a) as being unpatentable over Imanaka et al. as applied to claims 1-6 and 11 above, and further in view of Bolash et al. (US 6,450,607).

Regarding claim 7, Imanaka teaches (column 23, lines 57-62) that the system is controlled by the device, but that it is also applicable to the case where the object of the invention is attained by supplying a program to a system or apparatus. Whereas, Bolash teaches (column 5, lines 43-49) that the alignment patterns are input numerically by the user into the driver software and processed by an alignment algorithm.

Imanaka et al. and Bolash et al. are analogous art because they both are from the same field of endeavor, inkjet printing.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the print driver software of Bolash with system of Imanaka et al.

The suggestion/motivation for doing so would have been to provide an alignment algorithm from the driver software for the printer to provide pen adjustment during printing operations.

Therefore, it would have been obvious to combine Imanaka et al. with Bolash et al. to obtain the invention as specified in claim 7.

Regarding claim 12, Imanaka et al. teaches a method for correcting systematic printing errors of an inkjet printhead comprising:

determining (column 6, lines 26-58) systematic errors that are associated with the printhead; recording and storing systematic errors (column 6, lines 36-43), as taught by Imanaka that the data is stored in the latch circuit (memory, fig. 1, 12); generating (column 6, lines 44-49) a correction scheme to correct the systematic errors; and applying the correction scheme (column 7, lines 13-22) to the printhead during printing operations to selectively print ink drops for

correcting printed artifacts produced by the systematic errors. But Imanaka does not specifically correcting alignment by strategically misaligning the ink drops during normal operation.

Whereas, Bolash teaches the ability to change the configuration in many different patterns both vertical and horizontal to best align marks. As shown in figures 5 and 6, the alignment of each of the pens of each color for visual alignment, which would include a purposeful misalignment for best visual interpretation.

Regarding claim 13, Imanaka et al. teaches a method for correcting systematic printing errors of an inkjet printhead comprising:

determining (column 6, lines 26-58) systematic errors that are associated with the printhead; recording and storing systematic errors (column 6, lines 36-43), as taught by Imanaka that the data is stored in the latch circuit (memory, fig. 1, 12); generating (column 6, lines 44-49) a correction scheme to correct the systematic errors; and applying the correction scheme (column 7, lines 13-22) to the printhead during printing operations to selectively print ink drops for correcting printed artifacts produced by the systematic errors. But Imanaka does not specifically detail determining odd/even alignment offsets for the printhead.

Whereas, Bolash shows both odd and even alignment offsets in figure 3 for all colors of CMYK.

Regarding claim 14, Imanaka et al. teaches a method for correcting systematic printing errors of an inkjet printhead that includes printing an alignment plot, examining the alignment plot to determine correct alignment for main ink drops and storing the correct alignment in a memory device, wherein examining the alignment plot includes at least one of automatically examining the plot with an alignment sensor. Imanaka (column 6, lines 30-43) teaches that either

after it is printed or during printing a CCD sensor examines the ink drops for proper density, which includes proper placement. And Bolash teaches (column 7, lines 24-32) an alignment plot being printed out for both the bi-directional (fig. 4) and uni-directional printing sequences (figs. 5 and 6), where fig. 5 represents the x-axis and fig. 6 represents the y-axis, the plots are then examined by the user to determine best visual alignment.

Regarding claim 15, Imanaka et al. teaches a method for correcting systematic printing errors of an inkjet printhead comprising:

determining (column 6, lines 26-58) systematic errors that are associated with the printhead; recording and storing systematic errors (column 6, lines 36-43), as taught by Imanaka that the data is stored in the latch circuit (memory, fig. 1, 12); generating (column 6, lines 44-49) a correction scheme to correct the systematic errors; and applying the correction scheme (column 7, lines 13-22) to the printhead during printing operations to selectively print ink drops for correcting printed artifacts produced by the systematic errors. But Imanaka does not specifically correcting alignment by strategically misaligning the ink drops during normal operation.

Whereas, Bolash teaches the ability to change the configuration in many different patterns both vertical and horizontal to best align marks. As shown in figures 5 and 6, the alignment of each of the pens of each color for visual alignment, which would include a purposeful misalignment for best visual interpretation.

9. Claims 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Imanaka et al. and Bolash et al. as applied to claims 1-15 above, and further in view of Endo (US 6,565,185).

Regarding claim 16, Imanaka et al. teaches a method for correcting systematic printing errors of an inkjet printhead comprising:

determining (column 6, lines 26-58) systematic errors that are associated with the printhead; recording and storing systematic errors (column 6, lines 36-43), as taught by Imanaka that the data is stored in the latch circuit (memory, fig. 1, 12); generating (column 6, lines 44-49) a correction scheme to correct the systematic errors; and applying the correction scheme (column 7, lines 13-22) to the printhead during printing operations to selectively print ink drops for correcting printed artifacts produced by the systematic errors. Bolash teaches (column 7, lines 24-32) an alignment plot being printed out for both the bi-directional (fig. 4) and uni-directional printing sequences (figs. 5 and 6), where fig. 5 represents the x-axis and fig. 6 represents the y-axis, the plots are then examined by the user to determine best visual alignment. Neither Imanaka nor Bolash teach examine the ink droplet while in flight.

Whereas, Endo teaches (column 7, lines 7-17) the ability to examine the ink droplets while in flight and while it is not explicitly disclosed it would have been obvious to one of ordinary skill in the art at the time the invention was made that the information would be saved in a memory device 13, such as the one disclosed by Imanaka.

Imanaka et al., Bolash et al. and Endo are analogous art because they both are from the same field of endeavor, inkjet printing.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the ability to examine the ink droplets during flight of Endo with Bolash and Imanaka.

The suggestion/motivation for doing so would have been to provide the ability to detect ink droplets in flight, to detect if a nozzle is clogged.

Therefore, it would have been obvious to combine Endo with Bolash and Imanaka to obtain the invention as specified in claim 16.

Regarding claim 17, Imanaka et al. teaches a method for correcting systematic printing errors of an inkjet printhead comprising:

determining (column 6, lines 26-58) systematic errors that are associated with the printhead; recording and storing systematic errors (column 6, lines 36-43), as taught by Imanaka that the data is stored in the latch circuit (memory, fig. 1, 12); generating (column 6, lines 44-49) a correction scheme to correct the systematic errors; and applying the correction scheme (column 7, lines 13-22) to the printhead during printing operations to selectively print ink drops for correcting printed artifacts produced by the systematic errors. But Imanaka does not specifically correcting alignment by strategically misaligning the ink drops during normal operation.

Whereas, Bolash teaches the ability to change the configuration in many different patterns both vertical and horizontal to best align marks. As shown in figures 5 and 6, the alignment of each of the pens of each color for visual alignment, which would include a purposeful misalignment for best visual interpretation. Further, Endo teaches (column 24, lines 52-67) if there is a problem with printing in the normal mode, the system allows for supplemental printing in either the overlap mode or supplemental pass mode, which allows for misalignment from normal printing.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Anderson et al. (US 6,017,112) discloses an inkjet printing apparatus that includes a primary and secondary set of nozzles.

Sato et al. (US 6,224,190) discloses an inkjet recording method that minimizes ink blur during printing.

Noyes et al. (US 6,297,888) discloses an improved technique for measuring misalignment between multiple print heads or between forward and reverse printing for the same printhead.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David L Jones whose telephone number is (703) 305-4675. The examiner can normally be reached on Monday - Friday (7:00am - 3:30pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Coles can be reached on (703) 305-4712. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

David L. Jones

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